

CONSTELLATION-MULTIPLEXED TRANSMITTER AND RECEIVER

5 ABSTRACT OF THE DISCLOSURE

A device of dynamic communication of information allows, on
 the average, non-integer bits per symbol transmission, using a
 compact code set or a partial response decoding receiver. A
 stream of selectable predetermined integer bits, e.g., k or $k+1$
 10 data bits, is grouped into a selectable integer number of bit
 vectors which then are mapped onto corresponding signal
 constellations forming transmission symbols. Two or more symbols
 can be grouped and further encoded, so that a symbol is spread
 across the two or more symbols being communicated. Sequence
 15 estimation using, for example, maximum likelihood techniques, as
 informed by noise estimates relative to the received signal.
 Each branch metric in computing the path metric of a considered
 sequence at the receiver is weighted by the inverse of the noise
 power. It is desirable that the constellation selection,
 20 sequence estimation and noise estimation be performed
 continuously and dynamically.

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